

Final Close Out Report
Western Pacific Railroad Superfund Site
Oroville, Butte County, California

I. INTRODUCTION

This Final Close Out Report documents that the U.S. Environmental Protection Agency (EPA) completed all response actions for the Western Pacific Railroad Superfund site in accordance with *Close Out Procedures for National Priorities List Sites* (OSWER Directive 9320.2-09A-P).

II SUMMARY OF SITE CONDITIONS

Background

The Western Pacific Railroad Site occupies approximately 90 acres at the southern end of the City of Oroville in Butte County, California. A residential area is located just east of the site, and industrial and undeveloped areas surround the rest of the site.

The Western Pacific Railroad Company operated a fueling and maintenance yard at the site from the 1880's until 1970. Activities at the site included locomotive fueling, routine maintenance, and railcar repair such as welding, painting, fabricating, and machining of railcars. In 1982 Union Pacific Railroad Company (UPRR) bought Western Pacific Railroad and continued to use the site for fueling and minor maintenance. In 1991 UPRR dismantled the remaining structures in the Fueling Area. Currently the only railroad activity at the site is the use of the rail line to run trains.

In 1989 the State of California's Regional Water Quality Control Board issued an Order requiring UPRR to investigate an on-site waste pond and the site groundwater. In 1989 the waste pond was excavated and backfilled with clean fill and a leaking underground storage tank in the Fueling Area was removed. This leaking tank was the source of a plume of groundwater contaminated with volatile organic chemicals (VOCs).

This VOC plume was spreading toward a public drinking water well that UPRR leased to the California Water Service. The potential impact to this public drinking water supply well was the primary reason the site was added to the National Priorities List (NPL) in August 1990. Even though the water in the well meets drinking water

standards, the well was taken out of service in 1996.

Groundwater Removal Activities

EPA made the decision in 1993 to initiate a time-critical removal to contain the VOC plume and prevent it from reaching the nearby downgradient public drinking water well. In August 1993, EPA issued an Action Memorandum with a streamlined risk evaluation selecting groundwater extraction and treatment to contain the contaminants of concern in the groundwater at the site. On August 27, 1993, EPA and UPRR signed an Administrative Order on Consent for Removal Action wherein UPRR agreed to install a pump and treat system consistent with the Action Memorandum.

In 1994 UPRR's contractor Dames & Moore (now URS) installed an extraction well and began operating a pump and treat system to extract and treat the groundwater. The contaminants above federal and state Maximum Contaminant Levels (MCLs) were 1,1-DCE and 1,1-DCA. 1,1,1-TCA and TCE were present but below MCLs. The original treatment system consisted of one extraction well, a bag filter, an air stripper, two granular activated carbon (GAC) units, an effluent storage tank, and an injection well. EPA conducted a final inspection on September 19, 1994, and determined that the system was operating as designed.

In 1996 EPA determined the GAC units were no longer a necessary part of the treatment unit because the air stripper alone was successful in cleaning the contaminated groundwater, so the GAC units were taken off-line.

Based on capture zone studies, site data, and mass removal calculations, EPA determined that the contaminant mass removal could be improved by expanding the extraction system. In 1997 a second groundwater extraction well with a soil vapor extraction (SVE) unit was installed near the source area. The results of the treatment system improvements were an immediate drop in concentration of 1,1-DCE in the groundwater and the removal of approximately 16 pounds of VOCs during the first 6 months of operation.

In July 1997 the level of 1,1-DCA dropped below the state MCL of 5 ppb and in October 1997 the level of 1,1-DCE dropped below the state MCL of 6 ppb. These contaminant levels remained below MCLs and after two years of continued monitoring, the SVE system was turned off in November 1999.

A final round of groundwater sampling conducted in July 2000 confirmed that all contaminants continue to remain below MCLs. Even though groundwater at the site meets all state drinking water standards, the public drinking water well is currently out of service and cannot be used to provide drinking water without EPA or State approval.

Remedial Investigation / Feasibility Study

Under UPRR's direction Dames & Moore conducted a remedial investigation (RI) at the site pursuant to the terms of an Administrative Order on Consent signed by UPRR and EPA in 1994. The RI focused on the site soils because the groundwater contamination was already being cleaned up with the groundwater treatment system.

The RI determined that elevated soil contamination was limited to the Fueling Area, and identified the following potential contaminants of concern in the Fueling Area: polycyclic aromatic hydrocarbons (PAHs), arsenic, and chromium. The Risk Assessment for the site evaluated the risks for industrial use, not residential, due to the site history, current use, and anticipated future industrial use by UPRR. The Risk Assessment concluded that arsenic and PAHs were the greatest human health concern and in concentrations in the Fueling Area soil above EPA's Preliminary Remediation Goals.

The highest concentrations of arsenic and PAHs were in the top one foot of soil in the Fueling Area. The PAH levels were converted to and presented as benzo(a)pyrene (B(a)P) equivalents in order to better represent the carcinogenic fraction in the PAHs, which pose the most significant risk to human health. The maximum concentration of PAHs as B(a)P equivalents was 28.29 mg/kg. The mean concentration of PAHs was 1.90 mg/kg as B(a)P equivalents. At 2 - 4 feet below ground surface (bgs) the maximum concentration of PAHs as B(a)P equivalents was 0.05 mg/kg. The maximum concentration of arsenic in the surface soil was 73.20 mg/kg. The mean concentration of arsenic was 16.08 mg/kg. At 2 - 4 feet bgs the maximum concentration of arsenic was 11.7 mg/kg and the mean was 3.31 mg/kg.

The Feasibility Study (FS) evaluated remedial action alternatives for the contaminated soils in the areas identified in the RI and Risk Assessment. The risk assessment concluded that contamination at the site presented an elevated risk to on-site workers and trespassers through dermal contact with soil contaminated with PAHs and arsenic. The FS then provided a detailed analysis of alternatives: (1) institutional controls only; (2) limited Fueling Area (1 acre) excavation and off-site disposal with institutional controls; and (3) entire Fueling Area (10 acres) excavation and off-site disposal with institutional controls.

Community Relations Activities

Community relations activities included the publication and distribution of several fact sheets, including the proposed cleanup plan, to local residents. The public comment period for the proposed cleanup plan was from July 16 to August 15, 1997. A public meeting on the proposed plan was held on July 29, 1997.

ROD Findings

On September 30, 1997, EPA issued a Record of Decision (ROD) which selected the following remedy:

- limited excavation and off-site disposal of approximately 1 acre of PAH-contaminated soil,
- institutional control(s) that will limit the future use of the property to industrial use only; and
- extraction and treatment of contaminated groundwater.

The ROD specified that the residual mean concentration for B(a)P equivalents must be reduced to 0.41 mg/kg or less. The ROD also concluded that due to the collocation of PAHs and arsenic in soils, by excavating surface soils with PAHs above cleanup levels, all soils contaminated with arsenic at levels of potential concern would also be addressed.

The selected remedy called for the cleanup of the one acre with the highest levels of contamination. The contamination levels in the other nine acres in the Fueling Area were below action levels for industrial workers and trespassers.

The groundwater cleanup, which had been initiated using EPA's removal authority, was incorporated into the ROD, with state and federal MCLs as the cleanup standards.

Remedial Construction Activities

EPA issued a Unilateral Administrative Order to Union Pacific Railroad Company on June 17, 1998, requiring UPRR to perform the remedial action selected in the ROD. The Order also directed UPRR to take steps to implement an effective institutional control that would restrict the future site use to industrial use only.

Dames & Moore prepared the Remedial Design Report and began excavating the contaminated soil in the Fueling Area on July 23, 1998. The field work was completed on July 29. The excavation depth was from one to two feet. Approximately 1,720 tons of contaminated soil was placed in railcars and shipped to the ECDC Environmental landfill near Price, Utah. EPA conducted a final inspection on December 10 and determined that the excavation was carried out according to the ROD.

Institutional Controls

On March 1, 2001, UPRR filed the Covenant to Restrict Use of Property for this site

with the Butte County Recorder's Office. The Covenant and Agreement is made between UPRR and the California Department of Toxic Substances Control, with the EPA as a third party beneficiary. It covers an area of approximately 90 acres and prohibits the property's use for:

- (a) A residence;
- (b) A hospital for humans;
- (c) A public or private school for persons under 21 years of age;
- (d) A day care center; and
- (e) Any other purpose involving residential occupancy on a 24-hour basis.

The restrictions in the Covenant run with the land and will be in effect in perpetuity, so all future owners and occupants of the property are bound by the Covenant. If any contaminated soils are brought to the surface during future construction activities, the lead agency (EPA or DTSC) must approve a Soil Management Plan. The groundwater at the site cannot be used for drinking water without prior approval by EPA or the State.

Remedial Action Report

URS prepared the Final Remedial Action Report for the site. EPA approved the report on June 12, 2001. This report documents that all of the remedial action cleanup goals have been achieved. A copy of this report is in the EPA Region 9 Superfund Records Center.

III DEMONSTRATION OF CLEANUP ACTIVITY QUALITY ASSURANCE AND QUALITY CONTROL

EPA and the State reviewed the Remedial Action Plan and all groundwater construction and monitoring plans for compliance with quality assurance and quality control (QA/QC) protocols. Activities at the site were determined to be consistent with the ROD and all plans and specifications.

The construction of the groundwater system adhered to the approved quality control plan and incorporated all State and EPA requirements. The EPA RPM visited the site during construction activities to review construction progress and review the results of QA/QC activities.

All procedures and protocols followed for groundwater and soil sample analyses are well documented. Only EPA analytical methods were used. Groundwater samples were split and analyzed by the EPA Region 9 laboratory. EPA determined that analytical results are accurate to the degree needed to assure satisfactory execution of the removal and remedial actions.

IV MONITORING RESULTS

All sample collection activities at the site were conducted in accordance with EPA protocol. Final groundwater sampling was conducted in July 2000, with all contaminants remaining below MCLs. Post-excavation confirmation sampling was conducted twice at the site, in July and in December 1998. This sampling confirmed that the residual mean concentration level for PAHs as expressed as B(a)P equivalents was reduced to 0.41 mg/kg or less. The cumulative cancer risk from PAHs and arsenic in the Fueling Area soil was reduced to an excess cancer risk level of approximately 1×10^{-5} (one in one hundred thousand) for on-site workers, which is the level established in the ROD.

IV SUMMARY OF OPERATION AND MAINTENANCE

Site operation and maintenance to be performed by UPRR include maintenance of the perimeter fence, informing EPA of any plan to remove contaminated soils during future construction activities, and informing EPA and the State of any transfer of property ownership.

VI SUMMARY OF REMEDIATION COSTS

The site cleanup was conducted by UPRR and its contractor. According to the Final Remedial Action Report, UPRR's total expenditures for the project as of May 2001 were approximately \$3,778,706. EPA oversight costs as of December 2000 were \$730,059, all of which have been reimbursed by UPRR.

VII PROTECTIVENESS

This site meets all the site completion requirements as specified in OSWER Directive 9320.2-09-A-P, *Close Out Procedures for National Priorities List Sites*. Specifically, confirmatory sampling verifies that the site has achieved ROD cleanup objectives, that the residual mean PAHs expressed as B(a)P equivalents concentration is 0.41mg/kg or less, and that all contaminants in the groundwater are below state and federal MCLs. Because contamination in the soil is above allowable levels for unrestricted use, a covenant to restrict use of the property is recorded with Butte County. Confirmatory groundwater sampling and backfilling the excavated area with clean soil provide further assurance that the site no longer poses a threat to human health or the environment.

VIII FIVE-YEAR REVIEW

EPA must conduct statutory Five-Year reviews at this site due to the residual contamination in soil that does not allow for unlimited use and unrestricted exposure. These reviews will be conducted pursuant to CERCLA 121 (c) and as provided in the current guidance on Five-Year Reviews. The first Five-Year Review Report will be completed by September 2002.

Approved by:



Laura Yoshii
Acting Regional Administrator

6/26/01
Date

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IX BIBLIOGRAPHY

- Dames & Moore, June 1991, Final Remedial Investigation and Risk Assessment Report, Western Pacific Railroad Superfund Site, Oroville, California
- Dames & Moore, July 1997, Focused Feasibility Study Report, Western Pacific Railroad Superfund Site, Oroville, California
- Dames & Moore, December 1997, Groundwater Removal Action Report Addendum, Western Pacific Railroad Superfund Site, Oroville, California
- Dames & Moore, March 1998, Draft Soil Remedial Action Work Plan, Western Pacific Railroad Superfund Site, Oroville, California
- Dames & Moore, August 1998, Draft Soil Remedial Action Report, Western Pacific Railroad Superfund Site, Oroville, California
- Dames & Moore, March 1999, Supplemental Sampling and Analysis Report Soil Remedial Action, Western Pacific Railroad Superfund Site, Oroville, California
- Dames & Moore, October 2000, Winter Quarter Groundwater and Treatment System Monitoring Report, Western Pacific Railroad Superfund Site, Oroville, California
- Union Pacific Railroad Company, March 1, 2001, Covenant To Restrict Use of Property (Health and Safety Code section 25355.5), Western Pacific Railroad Superfund Site, Oroville, California
- URS, June 2001, Final Remedial Action Report, Western Pacific Railroad Superfund Site, Oroville, California
- US EPA, August 27, 1993, Administrative Order On Consent for Removal Action, Western Pacific Railroad Superfund Site, Oroville, California
- US EPA, September 30, 1997, Record of Decision, Western Pacific Railroad Superfund Site, Oroville, California
- US EPA, June 17, 1998, Administrative Order for Remedial Action, Western Pacific Railroad Superfund Site, Oroville, California
- US EPA, March 31, 1999, Preliminary Close Out Report, Western Pacific Railroad Superfund Site, Oroville, California